



# **LIST OF RADIONAVIGATION SERVICES**

## DGNSS Reference and Transmitting Stations in the Maritime Radionavigation (Radio Beacons) Band

(283.5-315 kHz Region 1; 285-325 kHz Regions 2 and 3)

Collated and Published by the  
**Association Internationale de Signalisation Maritime**  
**International Association of Lighthouse Authorities**

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**This Master List of DGNSS Reference and Transmitting Stations  
has been compiled from information provided by IALA members.  
IALA accepts no responsibility for the correctness of the data herein.**

# **Master List of DGNSS Reference and Transmitting Stations in the Maritime Radionavigation (Radiobeacon) Band.**

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**Master List of DGNSS Reference and Transmitting Stations  
in the Maritime Radionavigation (Radiobeacon) Band.  
(283.5-315 kHz Region 1, 285-325 kHz Regions 2 & 3)**

## **SECTION 1**

### **1.1 Introduction**

Throughout the world medium frequency (MF) maritime radiobeacons are being used for the broadcast of differential corrections to users of the Global Positioning System (GPS). This system adds a modulated signal to the normal radiobeacon transmission in the 283.5 to 325 kHz band. It uses minimum shift keying (MSK) to modulate the radiobeacon transmissions at data rates of 25 to 200 bits per second.

Some administrations are also planning to transmit differential corrections to the users of the GLONASS system.

GPS and GLONASS are components of the Global Navigation Satellite System (GNSS) and the radiobeacons which transmit differential corrections are called DGNSS Transmitting Stations. The installation which is used to establish and compute the actual corrections is called the reference station and can be co-located with the transmitter or located at a different site.

An identification number is allocated to the transmitter and a different identification number to the reference station. In agreement with the International Telecommunications Union (ITU), IALA has agreed to coordinate and produce a Master List of DGNSS Reference and Transmitting Stations together with their main parameters and identification numbers.

These identification numbers are transmitted within the correction signal to the user's receiver which automatically corrects the GPS signal to provide a more accurate position fix, as well as integrity warnings.

Absolute or Geodetic Accuracy is defined\* as the accuracy of a position with respect to the geographic or geodetic coordinates of the Earth. Most differential GPS services provide the corrections to the WGS 84 position. If another coordinate system is used this should be indicated by broadcasting a Message Type 4. Users should be advised to ensure that their receiving equipment is capable of interpreting and displaying this information, since the errors introduced by using the wrong co-ordinate system could be greater than those of the uncorrected position.

\*IMO Assembly Resolution A.860(20) on Maritime Policy for a Future GNSS

## 1.2 Master List

The Master List contains details of the DGNSS services provided by member Authorities.

The List includes identification numbers for the reference stations from which the corrections are derived as well as the transmitting stations which broadcast the information. The reference station numbers are included in the header of every Type 1 or Type 9 message. The transmitting station numbers are included in Type 7 messages.

The List also includes details of the message type numbers which may be transmitted from each station. The titles of each message type number are :

<u>GPS</u> message type number	Title	<u>GLONASS</u> message type number
1	Differential GNSS corrections (full set of satellites)	31
3	Reference station parameters	32
4	Datum used	TBD
5	Constellation health	33
6	Null frame	34
7	Radio beacon almanacs	35
9	Sub-set differential GNSS corrections	34
15	Ionospheric corrections	TBD
16	Special messages	36

Notes :

1. The nominal range given in the List represents the reliable DGNSS operating range at the given field strength.
2. Frequencies must be coordinated with neighbouring Authorities, via the national telecommunications authority.
3. Integrity monitoring provides an indication within the header of a Type 1 or Type 9 message that the reference station is healthy, unhealthy or unmonitored.

**Section 2 : Table of DGNSS Stations****Country : ARABIAN GULF - MENAS****Date of issue : March 1999**

Station name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
BAHRAIN	480 481	140	26°07' N 050° 39' E	450	75	YES	YES	3,6,7,9,16	298	200	
KUWAIT	482 483	141	29°07' N 048° 08' E	450	75	YES	YES	3,6,7,9,16	295	200	
RAS AL KHAIMAH	484 485	142	25°59' N 056° 04' E	450	75	YES	YES	3,6,7,9,16	292	200	
ABU DHABI	486 487	143	24°06' N 052°56' E	450	75	YES	YES	3,6,7,9,16	314	200	

**Section 2 : Table of DGNSS Stations****Country : A U S T R A L I A****Date of issue : July 1997**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Cape Schanck	0	700	38°30'S 144°53'E	220	50	yes	yes	1, 16	314	100	1) 2) 3)
Karratha	1	701	20°45'S 116°27'E	200	50	yes	yes	1, 16	304	100	1) 2) 3)
Horn Island	2	702	10°36'S 142°17'E	250	50	yes	yes	9, 16	320	200	1) 2)

## Remarks

- 1) Test operation
- 2) Nominal range value is provisional only, and applies to an all over sea path.
- 3) To be converted to Type 9 message at 200 bits per second at a later stage

**Section 2 : Table of DGNSS Stations****Country : B E L G I U M****Date of issue : July 1997**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Oostende	640 641	420	51°14' N 02°55' E	70	50	YES	YES	3 6 7 9 16	<b>311.50</b>	<b>200</b>	

**Remarks**

**Section 2 : Table of DGNSS Stations****Country : B E R M U D A****Date of issue : July 1997**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
St. Davids Head		950	32°22'N 64°38'W	320	(*)	yes	yes	1 3 5 7 16	323	100	

Remarks

(\*) not given

**Section 2 : Table of DGNSS Stations****Country : B R A Z I L****Date of issue : September 1997**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
CANIVETE	0463		00°30,52' S 050°24,84' W	300	320	YES	NO	1,2,3,6,16	310	100	1) 2) 3) 4)
SÃO MARCOS	0460		02°29,84' S 044°18,09' W	300	320	YES	NO	1,2,3,6,16	300	100	1) 2) 3) 4) 5)
ABROLHOS	0461		17°57,88' S 038°41,64' W	370	20	YES	NO	1,2,3,6,16	290	100	2) 3) 4)
SÃO TOMÉ	0465		22°02,54' S 041°03,18' W	370	20	YES	NO	1,2,3,6,16	300	100	2) 3) 4)
MOELA	0462		24°02,87' S 046°15,80' W	370	20	YES	NO	1,2,3,6,16	305	100	2) 3) 4)
RIO GRANDE	0464		32°08,90' S 052°06,19' W	370	20	YES	NO	1,2,3,6,16	290	100	2) 3) 4)
SANTA MARTA	0466		28°35,27' S 048°48,83' W	370	20	YES	NO	1,2,3,6,16	310	100	2) 3) 4)

**Remarks**

- 1) The nominal range was based on 320  $\mu$ V/m due to the propagation conditions near the equatorial great circle.
- 2) Experimental operation. Stations are not under automatic integrity monitoring. All stations except SÃO MARCOS are referred to WGS-84 Datum
- 3) Station ID numbers assigned according to the Region to which Brazil belongs. Subject to confirmation by IALA.
- 4) The inherent accuracy of the system is 3 metres, added to a degradation proportional to 2 ppm x distance to the reference station
- 5) This station has its position referred to CÓRREGO ALEGRE Datum which is employed in Brazilian nautical charts. Users must leave their respective receivers operating with WGS-84 Satum and will read positions that can be plotted directly on Brazilian nautical charts.  
Other users must first transform their navigation solutions to the particular datum they are using.

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
CALCANHAR	0467		05°09,61' S 035°29,25' W	370	20	YES	NO	1,2,3,6,16	305		2) 3) 4)
ARACAJÚ	0468		10°58,18' S 037°02,19' W	370	20	YES	NO	1,2,3,6,16	320	100	3) 5)

### Remarks

- 1) The nominal range was based on 320  $\mu$ V/m due to the propagation conditions near the equatorial great circle.
- 2) Experimental operation. Stations are not under automatic integrity monitoring. All stations except SÃO MARCOS are referred to WGS-84 Datum
- 3) Station ID numbers assigned according to the Region to which Brazil belongs. Subject to confirmation by IALA.
- 4) The inherent accuracy of the system is 3 metres, added to a degradation proportional to 2 ppm x distance to the reference station
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Other users must first transform their navigation solutions to the particular datum they are using.

**Section 2 : Table of DGNSS Stations****Country : C A N A D A****Date of issue : July 1997**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (µV/m)						
Alert Bay BC.	300, 301	909	50°35'N 126°55'W	450	75	mid 1996		3 5 6 7 9 16	309	200	2) 4)
Amphitrite Pt. BC.	302, 303	908	48°55'N 125°32'W	350	75	mid 1996		3 5 6 7 9 16	315	200	2) 4)
Point Atkinson BC.	304, 305	907	49°19'N 123°15'W	90 170	75	yes mid 1996		1 3 3 5 6 7 9 16	320 320	100 200	1) 4) 2) 4)
Sandspit BC.	306, 307	906	53°14'N 131°48'W	350	75	1997		3 5 6 7 9 16	300	200	2) 4)
Race Rocks BC.			48°18'N 123°32'W	75	75	yes		1 3	309	100	1) 4) 5)
Triple Island BC.			54°17'N 130°52'W	90	75	yes		1 3 16	308	100	1) 4) 5)
St.Jean Richelieu QUE.	312, 313	929	45°19'N 73°18'W	200 330	75	yes mid 1996		1 2 3 7 16 3 5 6 7 9 16	308 296	100 200	1) 3) 2) 4)
Lauzon QUE.	316, 317	927	46°48'N 71°09'W	200 330	75	yes mid 1996		1 2 3 7 16 3 5 6 7 9 16	314 309	100 200	1) 3) 2) 4)

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Trois-Rivières QUE.	314	928	46°23'N 72°27'W	115 170	75	yes mid 1996		1 2 3 7 16 3 5 6 7 9 15 16	321 321	100 200	1) 3) 2) 4) 5)
Rivière du Loup QUE.	318, 319	926	47°45'N 69°36'W	300	75	1997		3 5 6 7 9 16	300	200	2) 4)
Moisie QUE.	320, 321	925	50°12'N 66°70'W	300	75	1997		3 5 6 7 9 16	313	200	2) 4)
Partridge Island NB.	326, 327	939	45°14'N 66°03'W	90 300	75	yes mid 1996		1 3 5 6 7 9 16	311 295	100 200	1) 2) 4) 2) 4)
Pt. Escuminiac NB.	332, 333	936	47°40'N 64°47'W	300	75	mid 1996		3 5 6 7 9 16	319	200	2) 4)
Western Head NS.	334, 335	935	43°59'N 64°39'W	110 300	75	yes 1997		1 3 5 6 7 9 16	312 312	100 200	1) 2) 4) 2) 4)
Fox Island NS.	336, 337	934	45°19'N 61°04'W	300	75	mid 1996		3 5 6 7 9 16	307	200	2) 4)
Cape Race NFLD.	338, 339	940	46°39'N 53°04'W	310 525	75	yes mid 1996		1 3 7 16 3 5 6 7 9 16	288 315	100 200	1) 2) 4) 2) 4)
Port aux Basques NFLD.	340, 341	942	47°34'N 59°09'W	170 350	75	Yes mid 1996		1 3 7 16 3 5 6 7 9 16	290 290	100 200	1) 2) 4) 2) 4)
Rigolet NFLD.	344, 345	947	54°15'N 58°30'W	300	75	1997		3 5 6 7 9 16	299	200	2) 4)

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Pistolet Bay NFLD.	342, 343	944	51°29'N 55°48'W	310 350	75	yes 1997		1 3 7 16 3 5 6 7 9 16	317 310	100 200	1) 2) 4) 2) 4)
Cardinal ON.	308, 309	919	44°47'N 75°25'W	300	75	mid 1996		3 5 6 7 9 16	306	200	2) 4)
Wiarton ON.	310, 311	918	44°42'N 81°08'W	250	75	1997		3 5 6 7 9 16	TBA	200	2) 4)
Point Petrie ON.			43°50'N 77°09'W	115	75	yes		1	303	100	1) 2) 4)
Resolute NWT.			74°45'N 94°58'W	120	75	summer navigation		1	300	100	1) 2) 4)

Remarks :

- 1) Test station
- 2) No DF identifier
- 3) Range based on field strength measurement
- 4) Planned or estimated range
- 5) Not part of proposed DGPS operational network

**Section 2 : Table of DGNSS Stations****Country : C H I N A****Date of issue : July 1997**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (µV/m)						
Dasanshan	602 603	601	38°52'N 121°50'E	300	50	21 July 97		3,5,7,9,16	301.5	200	1) 2) DS/301
Qinhuangdao	606 607	603	39°55'N 119°37'E	300	50	21 July 97		3,5,7,9,16	287.5	200	1) 2) QH/287
Beitang	608 609	604	39°06'N 117°43'E	300	50	21 July 97		3,5,7,9,16	310.5	200	1) 2) BT/310
Wangjiamai	614 615	607	36°04'N 120°26'E	300	50	21 July 97		3,5,7,9,16	313.5	200	1) 2) MD/313
Dajishan	624 625	612	30°49'N 122°10'E	300	50	21 July 97		9	307.5	200	1) 2) DJ/307

**Remarks**

- 1) Normal operation with 24 hours integrity monitoring  
 2) Associated RDF Morse Identifier/Frequency

**Section 2 : Table of DGNSS Stations****Country: DENMARK / FAROE ISLANDS****Date of issue: September 1997**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (µV/m)						
HAMMER ODDE	700 701	451	55°18' N 14°46' E	330	50	YES	YES	3 6 7 9 16	289.00	100	1)
SKAGEN	710 711	453	57°45' N 10°35' E	185	50	YES	YES	3 6 7 9 16	298.50	100	1)
BLAAVANDSHUK	705 706	452	55°34' N 08°05' E	277	50	YES	YES	3 6 7 9 16	296.50	100	1)
THORSHAUN	715 716	454	62°01' N 06°50' W	370	50	YES	YES	3 6 7 9 16	287.00	100	Operation: Spring/Summer 1999

**Remarks**

- 1) Operation with integrity monitoring, remote control and 24 hour manned watch.

**Section 2 : Table of DGNSS Stations****Country : ESTONIA****Date of issue : July 1997**

Station name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		(km)	at ( $\mu$ V/m)						
Ristna	840	530	58°56'N 22°04'E	200	50	YES	YES	3 6 7 9 16	307,0	200	1) 2)

**Remarks**

- 1) Test operation with integrity monitoring and remote control. Final operational condition expected to be implemented during 1997.
- 2) The most recent issue of this table, coverage diagrams and other free material is available by calling + 358 204 48 4305

**Section 2 : Table of DGNSS Stations****Country : F I N L A N D****Date of issue : July 1997**

Station name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (µV/m)						
Mäntyluoto	601	401	61°36'N 21°28' E	250	50	YES	YES	3 6 7 9 16	298,0	200	1)
Outokumpu	603	403	62°41'N 29°01'E	70	50	YES	YES	3 6 7 9 16	293,5	200	1)
Porkkala	600	400	59°58' N 24°23' E	250	50	YES	YES	3 6 7 9 16	285,0	200	1)
Puumala	602	402	61°24'N 28°14'E	70	50	YES	YES	3 6 7 9 16	301,5	200	1)
Turku	604	404	60°26'N 22°13'E	200	50	YES	YES	3 6 7 9 16	304,0	200	1)

**Remarks**

- 1) Test operation with integrity monitoring and remote control.  
Final operational condition expected to be implemented during 1997.
- 2) The most recent issue of this table, coverage diagrams and other free material is available by calling + 358 204 48 4305

***Important!***

*These DGPS transmissions are transmitted for test purposes only. The Finnish Maritime Administration accepts no responsibility for neither the correctness of this information, the availability of, nor the correctness of transmissions.*

*Conditions of inoperability and/or malfunction are not promulgated.*

*Users may use the system for navigational purposes entirely on their own risk.*

**Section 2 : Table of DGNSS stations****Country : F R A N C E****Date of issue : March 1999**

Station name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Messages types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/M)						
Gatteville	460	330	49°42'N 01°16'W	90	50	YES	planned 1999	1 3 5 7 9	297,5	100	1)
Saint Mathieu	462	332	48°20'N 04°46'W	90	50	YES	YES	1 3 5 7 9	291,5	100	1)
Pen Men	463	333	47°39'N 03°31'W	90	50	YES	YES	1 3 5 7 9	298,0	100	1)
Les Baleines	464	334	46°15'N 01°34'W	90	50	YES	planned 1999	1 3 5 7 9	299,5	100	1)
Cap Ferret	466	336	44°39'N 01°15'W	90	50	YES	YES	1 3 5 7 9	287	100	1)
Cap Bear	468	338	42°31'N 03°08'E	90	50	YES	YES	1 3 5 7 9	304,5	100	1)
Porquerolles	469	339	42°59'N 06°12'E	130	50	YES	YES	1 3 5 7 9	314,5	100	1)

**Remarks:**

- 1) Test operation with integrity monitoring and remote control

**Section 2 : Table of DGNSS Stations****Country : G E R M A N Y****Date of issue : July 1997**

Station name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (µV/m)						
Wustrow	820, 821	491	54°20'N 12°23'E	130	50	YES	YES	3 6 7 9 16	314.50	200	1)
Helgoland	822, 823	492	54°11'N 07°53'E	130	50	YES	YES	3 6 7 9 16	313.00	200	1)

**Remarks**

- 1) Reference station can be used up to twice the nominal range under normal noise conditions.  
 Maximum usable range depends also on receiver performance.

**Section 2 : Table of DGNSS Stations****Country : HONG KONG CHINA****Date of issue : July 1997**

Station name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Kau Yi Chau	(*)	(*)	22-17-02.59N 114-04-34.71E	500	20	yes	yes	1 2 3 5 6 16	289	200	1)

1) Operated by Hydrographic Office, Marine Department at Tel. No. (852) 2504 0267

(\*) Not given

**Section 2 : Table of DGNSS Stations****Country : I C E L A N D****Date of issue : March 1999**

Station name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (µV/m)						
Reykjanes	622 623	411	63°49'N 22°42'W	350	50	yes	yes	1 3 6 7 16	292.50	100	1) 2) 4)
Bjargtangar	624 625	412	65°30'N 24°32'W	150	50	yes	Yes	1 3 6 7 16	289.00	100	1) 3) 4)
Skagatá	626 627	413	66°07'N 20°06'W	200	50	yes	yes	1 3 6 7 16	304.50	100	1) 2) 4)
Raufarhofn	628 629	414	66°27'N 15°57'W	400	50	yes	yes	1 3 6 7 16	301.50	100	1) 2) 4)
Djupivogur	630 631	415	64°39'N 14°17'W	260	50	yes	yes	1 3 6 7 16	295.50	100	1) 2) 4)
Skardsfjara	632 633	416	63°31'N 17°59'W	350	50	yes	yes	1 3 6 7 16	313.00	100	1) 2) 4)

**Remarks**

- 1) Type 9 will be transmitted instead of type 1
- 2) Range based on field measurement
- 3) Expected range
- 4) Reference station ID is the same as Transmitting station ID for the time being

**Table of DGNSS Stations****Country : IRELAND****Date of issue : August 1999**

Station name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station	Transmitter station		km	at ( $\mu$ V/m)						
Tory Island	670	435	55°16'N 08°15'W	277	50	mid-98	Yes	3 7 9 16	313.50	100	Trial basis
Loop Head	665	432	52°34'N 09°56'W	185	50	mid-98	Yes	3 7 9 16	312.00	100	Trial basis
Mizen Head	660	430	51°27'N 09°49'W	185	50	mid-98	Yes	3 7 9 16	300.50	100	Trial basis

**Section 2 :Table of DGNSS Stations****Country : ITALY****Date of issue : September 1998**

Station name	Identification Numbers		Geographical Position Latitude Longitude	Nominal range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Piombino			42°55' N 010°32' E	200	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Fiumicino			41°46' N 012°12' E	200	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Foce F. Volturno			40°49 N 014°00' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Paola			39°35 N 015°48' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Glola Tauro			38°27' N 015°52' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
S.Maria di Leuca			39°45' N 018°22' E	200	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Molfetta			41°18 N 016°31 E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Pescara			42°28 N 014°14' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Senigallia			43°39' N 13°15' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Punta della Maestra			45°10' N 012°19' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	

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Station name	Identification Numbers		Geographical Position Latitude Longitude	Nominal range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (µV/m)						
S.Vito Lo Capo			38°11' N 012°44' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
C° Passero			36°46' N 015°07' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
C° Carbonara			39°10' N 009°30' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Olbia			40°53' N 009°30' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Oristano			40°00'N 008°25' E	150	75	Proposed 1999	Yes	3, 5, 9, 16		100	
Lampedusa			35°29' N 012°36' E	200	75	Proposed 1999	Yes	3, 5, 9, 16		100	

**Section 2 : Table of DGNSS Stations****Country : JAPAN****Date of issue : April 1998**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Turugi Saki	686 687	643	35° 08' 17" N 139° 40' 40" E	200	100	YES	YES	3 5 6 7 9	309	200	
Daio Saki	692 693	646	34° 16' 30" N 136° 54' 14" E	200	100	YES	YES	3 5 6 7 9	288	200	
Kinkasan	680 681	640	38° 16' 27" N 141° 35' 12" E	200	100	YES	YES	3 5 6 7 9	316	200	
Inubo Saki	682 683	641	35° 42' 15" N 140° 52' 17" E	200	100	YES	YES	3 5 6 7 9	295	200	
Hatizyo Sima	688 689	644	33° 04' 36" N 139° 51' 18" E	200	100	YES	YES	3 5 6 7 9	302	200	
Muroto Saki	694 695	647	33° 14' 54" N 134° 10' 46" E	200	100	YES	YES	3 5 6 7 9	295	200	
Esaki	696 697	648	34° 35' 37" N 134° 59' 42" E	200	100	YES	YES	3 5 6 7 9	320.5	200	
Ohama	698 699	649	34° 05' 12" N 132° 59' 38" E	200	100	YES	YES	3 5 6 7 9	321	200	
Seto	700 701	650	33° 25' 52" N 132° 13' 23" E	200	100	YES	YES	3 5 6 7 9	320	200	
Wakamiya	702 703	651	33° 51' 57" N 129° 41' 19" E	200	100	YES	YES	3 5 6 7 9	295	200	

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Ose Saki	704	652	32° 36' 49" N 128° 36' 29" E	200	100	YES	YES	3 5 6 7 9	302	200	
	705										
Hamada	704	635	34° 52' 30" N 132° 02' 29" E	200	100	YES	YES	3 5 6 7 9	305	200	
	705										
Toi Misaki	706	653	31° 22' 11" N 131° 20' 13" E	200	100	YES	YES	3 5 6 7 9	309	200	
	707										

**Section 2 : Table of DGNSS Stations****Country : KOREA****Date of issue : July 1997**

Station name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Yongdo	720, 721	660	35°02.9'N 129°34.3'E	185	75	no	yes	9	300	100	
Palmido	722, 723	661	37°21.3'N 126°30.8'E	185	75	no	yes	9	313	100	
Komundo	724, 725	662	34°00.3'N 127°19.5'E	185	75	no	yes	9	287	100	
Chumunjin	726, 727	663	37°53.7'N 128°50.2'E	185	75	no	yes	9	295	100	
Ochongdo	728, 729	664	36°07.2'N 125°58.1'E	185	75	no	yes	9	295	100	
Chukto	730, 731	665	34°13.4'N 125°58.1'E	185	75	no	yes	9	290	100	
Changgigot	732, 734	666	36°04.5'N 129°34.3'E	185	75	no	yes	9	310	100	

**Section 2 : Table of DGNSS Stations****Country : M A L A Y S I A , SARAWAK****Date of issue : July 1997**

Station name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Bintulu	821		3°11.09 130°.02.03	450	40	yes	yes	1 3 7 9 16	290	200	On trial
Kuching	822		1°43.2' N 110°31.2' E	400	40	planned 1997	yes	1 3 7 9 16	305	200	Planned for 1997

**Section 2 : Table of DGNSS Stations****Country : THE NETHERLANDS****Date of issue : September 1997**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
HOEK VAN HOLLAND	650 651	425	51°59' N 04°07' E	220	50	YES	YES	3 6 7 9 16	287,5	200	
VLIELAND	655 656	428	53°17' N 05°03' E	220	50	YES	YES	3 6 7 9 16	299,5	200	

Remarks :

**Section 2 : Table of DGNSS Stations****Country: N O R W A Y****Date of issue: July 1997**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (μm)						
FÆRDER	780 810	500	59°01.6' N 10°31.5' E	110	50	YES	YES	1,2,3,5,7	288.0	100	
LISTA	783 813	503	58°06.5' N 06°34.2' E	110	50	YES	YES	1,2,3,5,7	301.0	100	
UTSIRA	785 815	505	59°18.5' N 04°52.4' E	110	50	YES	YES	1,2,3,5,7	307.0	100	
UTVÆR	787 817	507	61°02.3' N 04°30.7' E	110	50	YES	YES	1,2,3,5,7	300.0	100	
SVINØY	788 818	508	62°19.7' N 05°16.2' E	110	50	YES	YES	1,2,3,5,7	293.5	100	
HALTEN	790 820	510	64°10.4' N 09°24.5' E	110	50	YES	YES	1,2,3,5,7	313.5	100	
SKLINNA	791 820	511	65°12.1' N 10°59.8' E	110	50	YES	YES	1,2,3,5,7	288.5	100	
SKOMVÆR	793 823	513	67°24.7' N 11°52.6' E	110	50	YES	YES	1,2,3,5,7	300.0	100	
ANDENES	794 824	515	69°19.7' N 16°08.5' E	110	50	YES	YES	1,2,3,5,7	284.5	100	

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Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (μ/m)						
TORSVÅG	796 826	516	70°14.7' N 19°30.5' E	110	50	YES	YES	1,2,3,5,7	291.5	100	
FRUHOLMEN	797 827	517	71°05.6' N 23°59.4' E	110	50	YES	YES	1,2,3,5,7	309.5	100	
VARDØ	800 830	520	70°23.3' N 31°09.4' E	110	50	YES	YES	1,2,3,5,7	307.0	100	

**Section 2 : Table of DGNSS Stations****Country : P O L A N D****Date of issue : July 1997**

Station name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (μV/m)						
Dziwnów		481	54°01'N 14°44'E	90	50	yes	yes	1 2 3 7 16	288.0	100	Test operation
Rozewie		482	54°49'N 18°20'E	90	50	yes	yes	1 2 3 7 16	311.0	100	Test operation

Remarks : Datum of Reference Stations WGS-84

**Table of DGNSS Stations****Country: RUSSIAN FEDERATION****Date of Issue: April 1998**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in Operation	Integrity Monitoring (s)	Transmitted message types**	Frequency (kHz)	Bitrate (bit/s)	Remarks
	Reference station(s)	Transmitting station		(km)	at ( $\mu$ V/m)						
Baltiisk		001	54°38' N 19°54' E	200	50	2001	Yes		284.0	100	
Shepelevkiy		002	59°59' N 29°09' E	200	50	1998	Yes	3, 6, 7, 9, 16	298.5	200	Test operation***
Tsyp. Navolock		003	69°44' N 33°06' E	200	50	1999	Yes		315.0	100	Instead of radiobeacon Set. Navolock
Dgedginsky		004	65°12' N 36°49' E	310	50	2000	Yes		298.5	100	
Canin-Nose		005	68°39' N 43°18' E	250	50	2000	Yes		285.5	100	
Tonky		006	69°51' N 61°07' E	250	50	1999	Yes	3, 6, 7, 9, 16	303.5	100	On trial***
Sterlegov		007	75°24' N 88°46' E	250	50	1998	Yes	3, 6, 7, 9, 16	318.5	100	On trial***
Andrea		008	76°44' N 110°27' E	500*	20	2000	Yes		291.5	100	

## Remarks:

\* The range will be determined after tests as the 300nm range radiobeacon is being developed

\*\* The messages for GPS/GLOASS will be planned to transmit after approval of standards on messages for GLOASS by ITU

\*\*\* Datum of Reference station WGS-84

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in Operation	Integrity Monitoring (s)	Transmitted message types**	Frequency (kHz)	Bitrate (bit/s)	Remarks
	Reference station(s)	Transmitting station		(km)	at ( $\mu$ V/m)						
Camenka		009	69°28' N 161°14' E	500*	20	2000	Yes		318.5	100	
Yanragai		010	69°54' N 170°32' E	500*	20	2000	Yes		291.5	100	
Russian Cat		011	64°34' N 178°33' E	500*	20	2000	Yes		315.5	100	
Caranginsky		012	58°33' N 163°33' E	500*	20	2000	Yes		301.5	100	
Africa		013	56°11' N 163°21' E	500*	20	2001	Yes		295.5	100	
Petropavlovsk y		014	52°53' N 158°42' E	500*	20	2000	Yes		286.5	100	
Vasilieva		015	50°00' N 155°26' E	500*	20	2001	Yes		294.5	100	
Alevina		016	58°50' N 151°21' E	500*	20	2001	Yes		285.5	100	
Crutogorova		017	55°05' N 155°35' E	500*	20	2001	Yes		300.5	100	

Remarks:

\* The range will be determined after tests as the 300nm range radiobeacon is being developed

\*\* The messages for GPS/GLONASS will be planned to transmit after approval of standards on messages for GLONASS by ITU

\*\*\* Datum of Reference station WGS-84

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in Operation	Integrity Monitoring (s)	Transmitted message types**	Frequency (kHz)	Bitrate (bit/s)	Remarks
	Reference station(s)	Transmitting station		(km)	at ( $\mu$ V/m)						
Elizavet		018	54°25' N 142°43' E	500*	20	2001	Yes		235.5	100	
Corsakovsky		019	46°37' N 142°48' E	500*	20	2000	Yes		284.5	100	
Gamov		020	42°33' N 131°13' E	500*	20	2001	Yes		310.5	100	
Astrahansky		021	44°41' N 47°35' E	200	50	1999	Yes		291.5	100	
Anapsky		022	44°53' N 37°18' E	200	50	1999	Yes		305.5	100	
Vize		023	79°30' N 76°59' E	500*	20	2000	Yes		294.5	100	
Oleniy		024	72°36' N 77°39' E	250	20	1998	Yes	3, 6, 7, 9, 16	294.5	100	On trial***
Enisey		025	68°25' N 86°22' E	200	20	1998	Yes	3, 6, 7, 9, 16	315.5	100	On trial***
Begichev		026	47°31' N 112°15' E	500*	20	2000	Yes		300.5	100	
Stolbovoy		027	74°10' N 135°27' E	500*	20	2001	Yes		306.5	100	

Remarks:

\* The range will be determined after tests as the 300nm range radiobeacon is being developed

\*\* The messages for GPS/GLONASS will be planned to transmit after approval of standards on messages for GLONASS by ITU

\*\*\* Datum of Reference station WGS-84

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in Operation	Integrity Monitoring (s)	Transmitted message types**	Frequency (kHz)	Bitrate (bit/s)	Remarks
	Reference station(s)	Transmitting station		(km)	at ( $\mu$ V/m)						
Cotelny		028	75°59' N 137°53' E	500*	20	2001	Yes		310.5	100	
Indygirsky		029	71°16' N 150°17' E	500*	20	2000	Yes		324.5	100	
Vrangelia		030	70°59' N 178°29' E	500*	20	2001	Yes		309.5	100	
Dedgneva		031	66°01' N 169°43' E	500*	20	2000	Yes		286.5	100	
Van-der-Linda		032	45°35' N 149°24' E	500*	20	2001	Yes		289.5	100	
Taganrogsky		033	47°12'N 38°57'E	200	50	2001	Yes		310.0	100	

Remarks:

\* The range will be determined after tests as the 300nm range radiobeacon is being developed

\*\* The messages for GPS/GLONASS will be planned to transmit after approval of standards on messages for GLONASS by ITU

\*\*\* Datum of Reference station WGS-84

**Section 2 : Table of DGNSS Stations****Country : S P A I N****Date of issue : July 1997**

Station name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at ( $\mu$ V/m)						
Machichaco	500/501	350	43°27'N 02°45'W	180	50	No	Yes	1 2 3 5 6 7 9 15 16	285.00	100/200	1)
Cabo Peñas	502/503	351	43°39'N 05°51'W	90	50	No	Yes	1 2 3 5 6 7 9 15 16	297.00	100/200	1)
Estaca de Bares	504/505	352	43°47'N 07°41'W	180	50	No	Yes	1 2 3 5 6 7 9 15 16	310.00	100/200	1)
Cabo Finisterre	506/507	353	42°53'N 09°16'W	180	75	No	Yes	1 2 3 5 6 7 9 15 16	289.00	100/200	1)
Rota	508/509	354	36°38'N 06°23'W	150	75	No	Yes	1 2 3 5 6 7 9 15 16	302.50	100/200	1)
Tarifa	510/511	355	36°00'N 05°36'W	90	75	No	Yes	1 2 3 5 6 7 9 15 16	299.50	100/200	1)
Malaga	512/513	356	36°43'N 04°25'W	90	75	No	Yes	1 2 3 5 6 7 9 15 16	304.50	100/200	1)
Cabo de Gata	514/515	357	36°43'N 02°11'W	90	75	No	Yes	1 2 3 5 6 7 9 15 16	297.50	100/200	1)
Cabo de Palos	516/517	358	37°38'N 00°41'W	90	75	No	Yes	1 2 3 5 6 7 9 15 16	313.50	100/200	1)

Station name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (µV/m)						
Cabo de la Nao	518/519	359	38°44'N 00°14'E	90	75	No	Yes	1 2 3 5 6 7 9 15 16	284.50	100/200	1)
Cala Figuera	520/521	360	39°27'N 02°31'E	90	75	No	Yes	1 2 3 5 6 7 9 15 16	286.00	100/200	1)
Mahon	522/523	361	39°52'N 04°18'E	180	75	No	Yes	1 2 3 5 6 7 9 15 16	292.50	100/200	1)
Castellon	524/525	362	39°58'N 00°01'E	90	75	No	Yes	1 2 3 5 6 7 9 15 16	311.00	100/200	1)
Cabo Salou	526/527	363	41°03'N 01°10'E	90	75	No	Yes	1 2 3 5 6 7 9 15 16	289.00	100/200	1)
Cabo San Sebastian	528/529	364	41°53'N 03°12'E	90	75	No	Yes	1 2 3 5 6 7 9 15 16	290.50	100/200	1)
La Entallada	530/531	365	28°13'N 13°56'W	190	100	No	Yes	1 2 3 5 6 7 9 15 16	292.50	100/200	1)
Tenerife	532/533	366	28°30'N 16°30'W	190	100	No	Yes	1 2 3 5 6 7 9 15 16	287.50	100/200	1) 2)

Remarks :

1)Radiobeacon DGPS service parameters (project)

Frequencies are not yet legalized

Messages Types and Bit Rates are those which reference stations will be able to transmit

Nominal ranges are calculated at SNR = 7dB

2)Tenerife radiobeacon does not exist yet. Geographical position is an approximate one.

Note:Type 1 and Type 9 messages are alternatives.

**Section 2 : Table of DGNSS Stations****Country : S W E D E N****Date of issue: July 1997**

Station Name	Identification Numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at (μV/m)						
BJURÖKLUBB		461	64°29' N 21°34' E	103	50	YES	YES	3 6 9 16	303,50	200	1)
JÄRNÄS		462	63°29' N 19°39' E	103	50	YES	YES	3 6 9 16	306,50	200	1)
ÖSKÄR		463	60°32' N 18°22' E	74	50	YES	YES	3 6 9 16	291,50	200	1)
ALMAGRUNDET		464	59°09' N 19°08' E	88	50	YES	YES	3 6 9 16	287,0	200	1)
HOBURG		465	56°55' N 18°09' E	74	50	YES	YES	3 6 9 16	302,0	200	1)
KULLEN		466	56°18' N 12°27' E	103	50	YES	YES	3 6 9 16	293,50	200	1)
HJORTONS UDDE		467	58°38' N 12°40' E	74	50	YES	YES	3 6 9 16	297,0	200	1)

**Remarks:**

1)The system is operational since May 1, 1996, ranges are according to IALA plan from 92 and have to be further studied.

**Section 2 : Table of DGNSS Stations****Country : UNITED KINGDOM****Date of issue : August 1999**

Station name	Identification Numbers		Geographical Position Latitude Longitude	Nominal range		Station in operation	Integrity Monitoring	Transmitted message types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station	Transmitting station		km	at (µV/m)						
Lizard	681	441	49°58'N 05°12'W	185	50	mid-98	Yes	3 7 9 16	284.00	100	Trial basis
St. Catherine's	680	440	50°35'N 01°18'W	185	50	mid-98	Yes	3 7 9 16	293.50	100	Trial basis
North Foreland	688	448	51°23'N 01°27'E	185	50	mid-98	Yes	3 7 9 16	310.50	100	Trial basis
Flamborough	687	447	54°07'N 00°05'W	185	50	mid-98	Yes	3 7 9 16	302.50	100	Trial basis
Girdle Ness	686	446	57°08'N 02°03'W	277	50	mid-98	Yes	3 7 9 16	311.00	100	Trial basis
Butt of Lewis	684	444	58°31'N 06°16'W	277	50	mid-98	Yes	3 7 9 16	294.00	100	Trial basis
Sumburgh Head	685	445	59°51'N 01°16'W	277	50	mid-98	Yes	3 7 9 16	304.00	100	Trial basis
Point Lynas	682	442	53°25'N 04°17'W	185	50	mid-98	Yes	3 7 9 16	305.00	100	Trial basis
Nash Point	689	449	51°24'N 03°33'W	185	50	mid-98	Yes	3 7 9 16	299.00	100	Trial basis

**Section 2 : Table of DGNSS Stations****Country: U. S. A.****Date of issue: April 1998**

Station Name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at 20 (μV/m)						
Wisconsin Pt, WI	100 101	830	46°42'36"N 92°00'29"W	65	75	yes	yes	3 5 6 7 9 15 16	296	100	1) 2)
Upper Keweenaw MI	102 103	831	47°13'42"N 88°37'30"W	210	75	yes	yes	3 5 6 7 9 15 16	298	100	1) 2)
Whitefish Pt. MI	108 109	834	46°46'18"N 84°57'24"W	160	75	yes	yes	3 5 6 7 9 16	318	100	1) 2)
Neebish Is. MI	110 111	835	46°19'14"N 84°09'16"W	100	100	yes	yes	3 5 6 7 9 16	309	100	1) 2)
Sturgeon Bay, WI	104 105	832	44°47'42"N 87°18'48W	175	75	yes	yes	3 5 6 7 9 16	322	100	1) 2)
Cheboygan, MI	112 113	836	45°37'00"N 84°14'07"W	130	100	yes	yes	3 5 6 7 9 16	292	100	1) 2)
Saginaw Bay, MI	114 115	837	44°15'12"N 83°26'54"W	140	75	yes	yes	3 5 6 7 9 16	301	100	1) 2)
Milwaukee, WI	106 107	833	43°01'36"N 87°52'54"W	225	75	yes	yes	3 5 6 7 9 16	297	100	1) 2)
Detroit, MI	116 117	838	42°17'48"N 83°05'37"W	160	100	yes	yes	3 5 6 7 9 16	319	100	1) 2)

**Remarks**

- 1) Datum of Reference Stations NAD 83  
 2) Message types will change to 3 4 5 6 7 9 15 16 at a later date

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Station Name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at 20 (μV/m)						
Youngstown, NY	118 119	839	43°14'10"N 79°01'03"W	240	75	yes	yes	3 5 6 7 9 16	322	100	1) 2)
Brunswick, ME	000 001	800	43°53'42"N 69°56'17"W	160	75	yes	yes	3 5 6 7 9 16	316	100	1) 2)
Portsmouth, NH	002 003	801	43°04'16"N 70°42'30"W	160	75	yes	yes	3 5 6 7 9 16	288	100	1) 2)
Chatham, MA	004 005	802	41°40'17"N 69°57'02"W	155	100	yes	yes	3 5 6 7 9 16	325	100	1) 2)
Sandy Hook, NJ	008 009	804	40°27'40"N 74°00'04"W	160	100	yes	yes	3 5 6 7 9 16	286	100	1) 2)
Cape Henlopen, DE	010 011	805	38°46'36"N 75°05'16"W	290	100	yes	yes	1 2 6 7 16	298	100	1) 2)
Cape Henry, VA	012 013	806	36°55'35"N 76°00'27"W	210	75	yes	yes	1 2 6 7 16	289	100	1) 2)
Fort Macon, NC	014 015	807	34°41'53"N 76°41'00"W	210	75	yes	yes	3 5 6 7 9 16	294	100	1) 2)
Charleston, SC	016 017	808	32°45'28"N 79°50'36"W	240	75	yes	yes	3 5 6 7 9 16	298	100	1) 2)
Cape Canaveral, FL	018 019	809	28°27'36"N 80°32'36"W	200	75	yes	yes	3 5 6 7 9 16	289	100	1) 2)

Remarks

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**FRANCE**  
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Station Name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at 20 (μV/m)						
Miami, FL	020 021	810	25°44'00"N 80°09'40"W	195	75	yes	yes	3 5 6 7 9 16	322	100	1) 2)
Key West, FL	022 023	811	24°35'05"N 31°39'14"W	175	75	yes	yes	3 5 6 7 9 16	286	100	1) 2)
Isabella, PR	034 035	817	18°28'01"N 67°04'15"W	200	75	yes	yes	3 5 6 7 9 16	295	100	1) 2)
Egmont Key, FL	024 025	812	27°36'02"N 82°45'39"W	340	75	yes	yes	3 5 6 7 9 16	312	100	1) 2)
Mobile Pt, AL	026 027	813	30°13'38"N 88°01'24"W	275	75	yes	yes	3 5 6 7 9 16	300	100	1) 2)
English Turn, LA	028 029	814	29°52'44"N 89°56'31"W	275	100	yes	yes	3 5 6 7 9 16	293	100	1) 2)
Galveston, TX	030 031	815	29°19'40"N 94°44'20"W	290	75	yes	yes	3 5 6 7 9 16	296	100	1) 2)
Aransas Pass, TX	032 033	816	27°50'18"N 97°03'32"W	180	75	yes	yes	3 5 6 7 9 16	304	100	1) 2)
Cape Hinchinbrook, AK	288 289	894	60°14'18"N 146°38'48"W	290	75	yes	yes	3 5 6 7 9 16	292	100	1) 2)
Potato Pt., AK	290 291	895	61°03'00"N 146°42'00"W	160	75	yes	yes	3 5 6 7 9 16	298	100	1) 2)

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Station Name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at 20 (μV/m)						
Kenai, AK	292 293	896	60°40'30"N 151°21'00"W	275	75	yes	yes	3 5 6 7 9 16	310	100	1) 2)
Kodiak, AK	294 295	897	57°37'08"N 152°11'21"W	290	75	yes	yes	3 5 6 7 9 16	313	100	1) 2)
Cold Bay, AK	296 297	898	55°11'24"N 162°42'11"W	290	75	yes	yes	3 5 6 7 9 16	289	100	1) 2)
Gustavus, AK	284 285	892	58°25'30N 135°42'25"W	275	75	yes	yes	3 5 6 7 9 16	288	100	
Annette Island, AK	278 279	889	55°04'20"N 131°36'30"W	275	75	yes	yes	3 5 6 7 9 16	323	100	
Upolu Pt., HI	258 259	879	20°14'48"N 155°53'12"W	275	75	yes	yes	3 5 6 7 9 16	286	100	
Kokole Pt., HI	260 261	880	22°03'30"N 159°46'34"W	485	75	yes	yes	3 5 6 7 9 16	300	100	
Whidbey Is., WA	276 277	888	48°18'47"N 122°41'41"W	145	75	yes	yes	3 5 6 7 9 16	302	100	
Robinson Pt., WA	274 275	887	47°23'18"N 122°22'24"W	95	100	yes	yes	3 5 6 7 9 16	323	100	
Fort Stevens, OR	272 273	886	46°12'20"N 123°57'20"W	290	75	yes	yes	3 5 6 7 9 16	287	100	

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Station Name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at 20 (μV/m)						
Cape Mendocino, CA	270 271	885	40°26'24"N 124°24'24"W	290	75	yes	yes	3 5 6 7 9 16	292	100	
Pigeon Pt., CA	266 267	883	37°10'54"N 122°23'36"W	290	75	yes	yes	3 5 6 7 9 16	287	100	
Pt. Blunt, CA	268 269	884	37°51'11"N 122°25'10"W	95	100	yes	yes	3 5 6 7 9 16	310	100	
Pt. Arguello, CA	264 265	882	34°34'42"N 120°38'36"W	290	75	yes	yes	3 5 6 7 9 16	321	100	
Pt. Loma, CA	262 263	881	32°39'59"N 117°14'34"W	290	75	yes	yes	3 5 6 7 9 16	302	100	
Vicksburg, MS	150 151	860	32°21'53"N 90°49'47"W	190	100	yes	yes	3 5 6 7 9 16	313	100	
Memphis, TN	152 153	861	35°27'57"N 90°12'20"W	190	100	yes	yes	3 5 6 7 9 16	310	100	
St. Louis, MO	154 155	862	38°36'40"N 89°45'30"W	190	100	yes	yes	3 5 6 7 9 16	322	100	
Rock Island, IL	156 157	863	42°00'30"N 90°14'11"W	240	100	yes	yes	3 5 6 7 9 16	311	200	
St. Paul, MN	158 159	864	44°18'15"N 91°54'15"W	240	100	yes	yes	3 5 6 7 9 16	317	100	

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Station Name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at 20 (μV/m)						
Millers Ferry, AL	160 161	865	32°05'24"N 87°23'44"W	240	100	yes	yes	3 5 6 7 9 16	320	100	
Sallisaw, OK	162 163	866	35°22'00"N 94°49'00"W	160	100	yes		3 5 6 7 9 16	299	100	
Kansas City, MO	164 165	867	39°07'04"N 95°24'53"W	160	100	Yes	yes	3 5 6 7 9 16	305	100	
Alexandria, VA	040 041	820	38°45'20"N 77°07'70"W	65	75	Test site			305	100	Users should note that transmissions from this site may be intermittent and turned off without warning
Appleton, WA	172 173	871	45°46'53"N 121°19'33"N	402	75	Yes			300	100	
C2CN, Portsmouth, VA	042 043	821	36°52'90"N 76°21'70"W	139	75	Test site			313	100	
Chico, CA	256 257	878	39°25'80"N 121°36'W	402	75	No			318	-	
Louisville, KY	168 169	869	38°00'60"N 85°17'90"W	241	100	Yes			290	200	
Moriches, NY	006 007	803	40°47'40"N 72°44'70"W	241	75	Yes			293	100	
Omaha, NE	166 167	868	41°46'70"N 95°55'70"W	241	100	Yes			298	200	

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Station Name	Identification numbers		Geographical Position Latitude Longitude	Nominal Range		Station in operation	Integrity Monitoring	Transmitted Message Types	Frequency (kHz)	Bit Rate (bps)	Remarks
	Reference station(s)	Transmitting station		km	at 20 ( $\mu$ V/m)						
Reedy Point, DE	170 171	870	39°33'68"N 75°34'19"W	81	100	No			309	200	
Savannah, GA	036 037	818	32°80'40"N 81°42'W	215	75	Yes			319	100	
Whitney, NE	148 149	859	42°44'N 103°19'W	325	75	Yes			310	200	

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## **SECTION 3**

This section contains details of the IALA procedures for the allocation of identification numbers and the inclusion or revision of station data in this publication of IALA Radionavigation Services.

### **3.1 Assigning Identification Numbers**

Authorities are requested to select identification numbers for the transmitting station and the reference station from the schedule of identification numbers at Table 1. If there are insufficient numbers available please contact the International Association of Lighthouse Authorities (IALA) and a further allocation will be made.

If an Authority does not wish to choose numbers itself, IALA will allocate numbers if requested to do so.

### **3.2 Annual Publication of the Master List**

This Master List of Stations will normally be updated and re-issued on April 1st each year, based on information received from Members. The new edition will also include, if necessary, a revision of Table 1.

### **3.3 Annual Closing Date for Master List Information**

A request to IALA Members for updating information will be included with the request for statistics information about Aids to Navigation which is sent to Members in May each year. A reminder to submit the information will be included in the IALA Bulletin number 3.

Additional information or revised information which is to be included in the Master List must be sent to IALA on or before January 1st each year. Information received after this date will be held for the following year's revision.

### **3.4 Address of IALA**

The International Association of Lighthouse Authorities (IALA)  
(DGNSS Master List)  
20 ter rue Schnapper  
78100 Saint Germain en Laye  
FRANCE

Phone number: 33 1 34 51 70 01  
Fax number: 33 1 34 51 82 05

**TABLE 1**

**Scheme for Assigning Identification Numbers  
to DGNSS Transmitters and Reference Stations**

Broadcasting Station ID	Geographical Area	Reference Station ID
000-099	Russian Federation, Commonwealth of Independent States	000-199
100-199	Indian Ocean	400-599
200-299	Africa	200-329
300-399	Mediterranean/North Africa	400-599
	300-329      Italy	400-439
	330-339      France	460-479
	340-349      Portugal	480-499
	350-370      Spain	500-540
400-539	Northern Europe/Baltic	600-899
	400-409      Finland	600-619
	410-419      Iceland	620-639
	420-429      Netherlands/Belgium	640-659
	430-439      Ireland	660-679
	440-449      UK	680-699
	450-459      Denmark	700-719
	460-469      Sweden	720-739
	480-489      Poland	740-759
	490-499      Germany	760-779
	500-529      Norway	780-839
600-699	China, Japan, Korea	600-799
	600-629      China	600-659
	630-659      Japan	660-719
	660-674      Korea	720-749
700-799	Australia, New Zealand, South East Asia	000-299
	700-729      Australia	000-059
	730-759      New Zealand	060-119

BROADCASTING STATION ID	GEOGRAPHICAL AREA	REFERENCE STATION ID
800-899	USA	000-299
900-949	Canada	300-399
950-999	Caribbean, Mexico, Central & South America	400-559
	950                   Bermuda	950-953
	951-960              Caribbean	400-419
	961-970              Mexico	420-439
	971-980              Central America	440-459
	981-990              South America	460-479
1000-1023	Pacific Ocean	300-399
540-599	Spares	
	Europe, Africa	900-1023
	Americas	560-1023
	Asia, Australia, Pacific Ocean	800-1023

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Note. When allocating sets of numbers from the spare list of Reference Station Identification Numbers care should be taken to ensure that any duplication of numbers with stations in other geographical regions provides substantial separation.